

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2000-159867

(43)Date of publication of application : 13.06.2000

---

(51)Int.Cl.

C08G 63/48  
C09D 11/08

---

(21)Application number : 10-337460

(71)Applicant : HARIMA CHEM INC

(22)Date of filing : 27.11.1998

(72)Inventor : TERADA NOBUHITO  
UEDA MASAYUKI  
HATA NORIAKI

---

### (54) RESIN FOR PRINTING INK

#### (57)Abstract:

PROBLEM TO BE SOLVED: To obtain a resin which is formaldehyde-free and gives a printing ink improved in offset printing characteristics and printing workability by esterifying polymerized rosin and dimer acid with a polyhydric alcohol.

SOLUTION: To a mixture of 100 pts.wt. polymerized rosin having a softening point of 90-140°C and an acid value of 140-160 with 1-200 pts.wt. dimer acid, added is 0.5-1.5 equivalents, desirably, 0.8-1.2 equivalents, per equivalent of the carboxylic acids of the polymerized rosin and the dimer acid, of a polyhydric alcohol. The resultant mixture is esterified at 230-290°C, desirably, 250-270°C for 5-15 h, desirably, 7-10 h in the presence of a catalyst such as magnesium oxide, zinc oxide, or calcium oxide and, optionally, a silicone antifoam to obtain a resin for a printing ink. This resin is mixed with a drying oil such as linseed oil or tung oil, a solvent, a pigment, and, optionally, a gelling agent, a fatty acid ester, etc., to obtain a printing ink.

---

### LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

JAPANESE

[JP,2000-159867,A]

[Trans-  
done]**\* NOTICES \***

**Japan Patent Office is not responsible for any damages caused by the use of this translation.**

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

**CLAIMS****[Claim(s)]**

[Claim 1] The resin for printing ink obtained by adding polyhydric alcohol to the mixture containing polymerization rosin and a dimer acid at a rate of 0.5-1.5Eq to 1Eq of carboxylic acids of this polymerization rosin and this dimer acid, and carrying out an esterification reaction.

[Claim 2] The resin for printing ink obtained by adding polyhydric alcohol to the mixture containing the denaturation polymerization rosin and dimer acid which were obtained by adding unsaturation polybasic acid of 7% or less of heavy quantitative ratios in polymerization rosin, and carrying out an addition reaction at a rate of 0.5-1.5Eq to 1Eq of carboxylic acids of this denaturation polymerization rosin and this dimer acid, and carrying out an esterification reaction.

[Claim 3] The resin for printing ink obtained by adding polyhydric alcohol to the mixture containing the polymerization rosin 100 weight section, and a dimer acid 1 - the 200 weight sections at a rate of 0.5-1.5Eq to 1Eq of carboxylic acids of this polymerization rosin and this dimer acid, and carrying out an esterification reaction.

[Claim 4] The resin for printing ink obtained by adding polyhydric alcohol to the mixture containing the denaturation polymerization rosin 100 weight section, and the dimer acid 1 - the 200 weight sections obtained by adding unsaturation polybasic acid of 7% or less of heavy quantitative ratios in polymerization rosin, and carrying out an addition reaction at a rate of 0.5-1.5Eq to 1Eq of carboxylic acids of this denaturation polymerization rosin and this dimer acid, and carrying out an esterification reaction.

[Claim 5] The ink resin for printing according to claim 2 or 4 characterized by being at least one sort of unsaturated carboxylic acids chosen from the group which the aforementioned unsaturation polybasic acid becomes from an acrylic acid, a methacrylic acid, a maleic acid, a maleic anhydride, a fumaric acid, an itaconic acid, itaconic acid anhydride, and a cinnamic acid.

[Claim 6] The ink resin for printing according to claim 1 to 5 characterized by being at least one sort of polyhydric alcohol chosen from the group which the aforementioned polyhydric alcohol becomes from a glycerol, a trimethylol propane, a diethylene glycol, a pentaerythritol, and dipentaerythritol.

[Claim 7] Ink for printing which uses the resin for printing ink according to claim 1 to 6, drying oil, a solvent, and a pigment as an indispensable component.

## XP-002257033

AN - 2000-454647 [40]

AP - JP19980337460 19981127

CPY - HARM

DC - A14 A97 G02

FS - CPI

IC - C08G63/48 ; C09D11/08

MC - A05-D02E A10-D05 A12-W07D G02-A04A

PA - (HARM ) HARIMA KASEI KK

PN - JP2000159867 A 20000613 DW200040 C08G63/48 007pp

PR - JP19980337460 19981127

XA - C2000-138803

XIC - C08G-063/48 ; C09D-011/08

AB - JP2000159867 NOVELTY - Resin for printing ink is obtained by adding one equivalent of carboxylic acid and 0.5-1.5 equivalence of polyhydric alcohol into a mixture containing polymerization resin and a dimer acid, followed by esterification.

- DETAILED DESCRIPTION - Resin for printing ink is obtained by adding one equivalent of carboxylic acid and 0.5-1.5 equivalence of polyhydric alcohol such as glycerol, trimethyl propane, diethylene glycol, pentaerythritol or dipentaerythritol into a mixture containing 100 weight part (wt.pts) of polymerization resin and 1-100 wt.pts of dimer acid, followed by esterification. Mixture of polymerization resin and dimer acid is obtained by adding unsaturated polybasic acid such as acrylic acid, methacrylic acid, maleic acid, maleic anhydride, fumaric acid, itaconic acid, anhydrous itaconic acid or cinnamic acid, with a weight ratio of 7% or less. Drying oil, solvent and pigment are also present in the ink.

- USE - For printing ink.

- ADVANTAGE - Resin which has offset printing property is obtained is obtained as a result of the esterification of the mixture of polymerization resin and dimer acid and absence of formaldehyde.

- (Dwg.0/0)

IW - RESIN PRINT INK OBTAIN ADD CARBOXYLIC ACID ALCOHOL MIXTURE CONTAIN RESIN DIMER ACID FOLLOW ESTERIFICATION

IKW - RESIN PRINT INK OBTAIN ADD CARBOXYLIC ACID ALCOHOL MIXTURE CONTAIN RESIN DIMER ACID FOLLOW ESTERIFICATION

NC - 001

OPD - 1998-11-27

ORD - 2000-06-13

PAW - (HARM ) HARIMA KASEI KK

TI - Resin for printing ink is obtained by adding carboxylic acid and polyhydric alcohol into mixture containing polymerization resin and dimer acid, followed by esterification.

A01 - [001] 018 ; R00901 G0760 G0022 D01 D12 D10 D51 D53 D59 D60 D84 F37 F35 E00 E01 ; R00843 G0760 G0022 D01 D23 D22 D31 D42 D51 D53 D59 D65 D75 D84 F39 E00 E01 ; R00902 G0760 G0022 D01 D12 D10 D51 D53 D59 D60 D84 F37 F35 E00 E02 ; R00654 G0760 G0022 D01 D12 D10 D51 D53 D58 D60 D85 F37 F35 E00 E03 ; G0806 G0022 D01 D51 D53 D12 D10 D19 D18 D31 D76 D59 D60 D89 F36 F35 ; R00446 G0282 G0271 G0260 G0022 D01 D12 D10 D26 D51 D53 D58 D60 D83 F36 F35 ; R00460 G0306 G0271 G0260 G0022 D01 D12 D10 D26 D51 D53 D58 D60 D84 F36 F35 ; G1025-R G0997 D01 F28 F26 ;